

5. (Canceled) Polyurethane spring mattress (1) according to the first claim, characterised in that each spring (5) acts as a perfectly elastic part that, after being deformed under the action of a force, recovers its original shape and position in a natural way once the action of said force has ceased.

6. (Canceled) Polyurethane spring mattress (1) according to the first claim, characterised in that it is provided with a visco-elastic layer of polyurethane (3) and knit padding (2).

7.- (New) Polyurethane foam spring mattress according to Claim 1, wherein said nucleus having said plurality of springs is made up from said block of polyurethane foam by means of an automatic programmable machine that cuts interiorly along a larger side of said block a first pair of mutually opposite zigzagged walls of said springs and, turning said block 90°, said programmable machine cuts interiorly along a smaller side of said block a second pair of mutually opposite zigzagged walls of said springs, and exceeding material is removed from inside said block, whereby said plurality of springs is formed internally to said block and the number of turns of said springs depends on the position of each spring along said larger and smaller sides.

REMARKS

Information Disclosure Statement

As requested by the Examiner, Applicant is now submitting an IDS listing the prior art together with copies of the patents listed in the International Search Report other than U.S. Patents:

- EP0367607 A1 (Span America, Medical Syst);
- DE 19919502 C1 (Huelsta Werke Huels);
- ES 1028212 U (José Manuel Gregorio Casamian et al); and
- The fourth patent, U0186551 U (Enrique Ayuso Canovas, classified A), cannot be retrieved

Claim rejections

Claims 2-6 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as his invention.

Claims 2, 3, 5 and 6 are canceled.

Claim 4 is amended. Care has been taken to correct errors of the original claim (narrative in form, with indefinite and functional or operational language, not in one sentence form only, dependence on the first claim)

Claims 1 and 5 are rejected 35 U.S.C. 102(b) as being clearly anticipated by Luke.

Claim 5 is canceled.

Claim 1 is amended.

Luke discloses a mattress overlay (col. 3, lin. 54-55), that is not a mattress, having a thickness of 2 inches (2/40-41). The mattress of the application has a thickness of 180 cm. The overlay features external pyramidal springs with flat surfaces while the mattress of the application features internal or external springs, with zigzagged walls that simulate a helical or pyramidal spring. Also, the overlay production involves a substantial waste of foam, whereas the mattress of the second embodiment is made up in only one operation with minimum waste of raw material. For these reasons the applicant believes that Luke does not anticipate the mattress of the application.

Claim 6 was rejected under 35 U.S.C. 103 (a) as being unpatentable over Luke in view of Landvik et al, teaching the use of the addition of a viscoelastic foam layer to a mattress.

Claim 6 is canceled and the viscoelastic foam layer is included as one of the components of the mattress in amended claim 1, but this feature does not constitute an innovation in the invention and therefore is not specifically claimed.

Claims 2-4 were rejected under 35 U.S.C. 103 (a) as being unpatentable over Luke in view of Raburn et al.

Claims 2-3 are canceled.

Raburn et al disclose a support pad with uniform patterned surface featuring transversal ribs and complementary troughs. All ribs (springs) are equal and symmetric and fill the entire width of the pad. Also, the ribs are external to the pad. However, the application discloses a mattress having internal or external springs, with zigzagged walls mutually displaced each respect to the opposite wall, thus imitating a real helical or conical

wire spring. Additionally, in the case of "helical" springs, they may have different number of turns according to the corresponding position along the longitudinal and transversal dimensions of the mattress depending on the stress the area must support. Applicant respectfully traverses the opinion of the Examiner and states that the features of the springs are not obvious in comparison to Luke and Raburn. The same conclusions must be reached in respect of the amended Claims 1 and 4 and new Claim 7 now submitted.

Poppe, which is cited as relevant art, discloses an elastic springy element, which consists of a tubular body made of synthetic foam material, where the wall of the body displays a number of hollows in staggered symmetry. These springs are completely different from those of the application along with the fact that they are produced one by one to be glued between two support layers, whereas the mattress of the application features springs with turns that form a single piece with the support and are shaped by means of two cutting operations on a block of foam.

Torres, which is cited as relevant art, discloses a spring mattress based on foam where the springs are equal and external or with another slab of foam glued on top (Figs. 3, 4 and para. 0009, lin. 8-10 and 14-16). Additionally they are obtained by means of two operations of cutting and pouring (para. 0009, lin. 2-3). The mattress of the application features internal springs obtained by means of a single operation of cutting.

According to the above mentioned arguments, applicant has worded Claim 1 (amended), Claim 4 (amended) and Claim 7 (new) which contain what the applicant believes is the essence of the invention.

Amended claim 1 details the mattress components focusing on the fact that each spring has pairs of opposite zigzagged walls and the zigzagged walls are mutually displaced thus imitating a real wire spring.

Amended claim 4 details an embodiment of the invention having external springs with truncated pyramidal configuration, where, by means of a single cutting operation, two equal and complementary mattresses are obtained with a minimum waste of foam.

New claim 7 details another embodiment of the invention having internal springs with variable configuration according to their position in the mattress and the operations performed to realise the mattress.

Amended Claims 1 and 4, as well as new Claim 7 are now referred to in order to identify the antecedent basis of their contents. In that follows, reference is made (in parentheses) to the applicable page/line of the original PCT specification where the antecedent basis for any amendment or addition can be found.

1. (Amended) Polyurethane foam spring mattress (1), [characterised in that the main body is] comprising a nucleus made from a single block of said material (page/line 2/17-18, 3/1-2, 5/32)

[and is provided with] having a plurality of springs (5) [of variable resistance to compression] with pairs of mutually opposite zigzagged walls being said zigzag of a first wall of each pair displaced with respect to said zigzag of a second wall of the same pair in such a way that each protruding part of said first wall zigzag coincides substantially with an inward part of said second wall of the same pair; (page/line 6/16-20);

a visco-elastic layer of flexible polyurethane foam 4 cm thick adhered on top of said nucleus

(page/line 3/3-4, 7/10-11);

and a three dimensional knit padding.

(page/line 3/6, 7/11)

4. (Amended) Polyurethane foam spring mattress (1) according to [the first] claim 1, [characterised in that] wherein the springs (5) of said mattress have the shape of the trunk of a pyramid (9) with pairs of mutually opposite zigzagged walls (page/line 6/16-20),

[and are provided with spirals (5.1)] and wherein a pair of said nuclei having said plurality of springs are shaped [by cutting a parallelepiped rectangular] in one process

(page/line 6/24-32)

from said block of polyurethane foam by means of a [specific] programmable machine with [in two steps: a first step for shaping by means of a cutting] a blade [manoeuvred by said machine, which covers] covering the entire length or width of [the] said polyurethane block

(page/line 6/11-12),

said blade cutting firstly a first pair of mutually [two first] opposite [faces of each] zigzagged walls of said springs (5) [and partially, two platforms (6) into which

all of the springs (5) of each mattress (1) are integrated, and a second step for shaping by means of the same cutting blade manoeuvred by said machine, which covers the entire length or width of the polyurethane block, a second pair of opposite faces adjacent to the first two faces and completely the two platforms (6) in which all of the springs (5) of each mattress are integrated, after turning said block 90° around a vertical axis, producing less than 1% of the material of the block as waste product since two essentially equal and complementary pieces are obtained.] along a longitudinal dimension of said block and secondly along a transversal dimension of said block, whereby both nuclei of said pair of nuclei having said plurality of truncated pyramidal springs are complementary and substantially equal.

(page/line 6/24-35)

and said pair of nuclei use substantially the entire block of polyurethane foam.

(page/line 6/35-7/7).

7.- (New) Polyurethane foam spring mattress according to Claim 1, wherein said nucleus having said plurality of springs is made up from said block of polyurethane foam by means of an automatic programmable machine that cuts interiorly along a larger side of said block a first pair of mutually opposite zigzagged walls of said springs and, turning said block 90°, said programmable machine cuts interiorly along a smaller side of said block a second pair of mutually opposite zigzagged walls of said springs, and exceeding material is removed from inside said block.

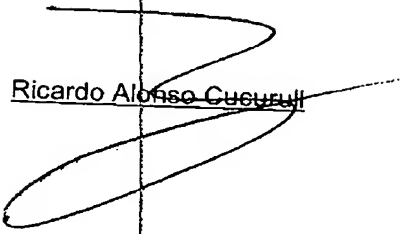
(page/line 2/17-22, 5/32-6/6, and Figs.),

whereby said plurality of springs is formed internally to said block and the number of turns of said springs depends on the position of each spring along said larger and smaller sides.

(page/line 2/17-33)

In view of the above, reconsideration and allowance of the pending claims are respectfully solicited.

Respectfully submitted


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ENGLISH LANGUAGE TRANSLATION OF INTERNATIONAL APPLICATION AS
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